(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

31 MAY 2005

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 June 2004 (10.06.2004)

PCT

(10) International Publication Number
WO 2004/049210 A1

(51) International Patent Classification[7]: G06F 17/30

(21) International Application Number:
PCT/NZ2003/000262

(22) International Filing Date:
27 November 2003 (27.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
522887 28 November 2002 (28.11.2002) NZ

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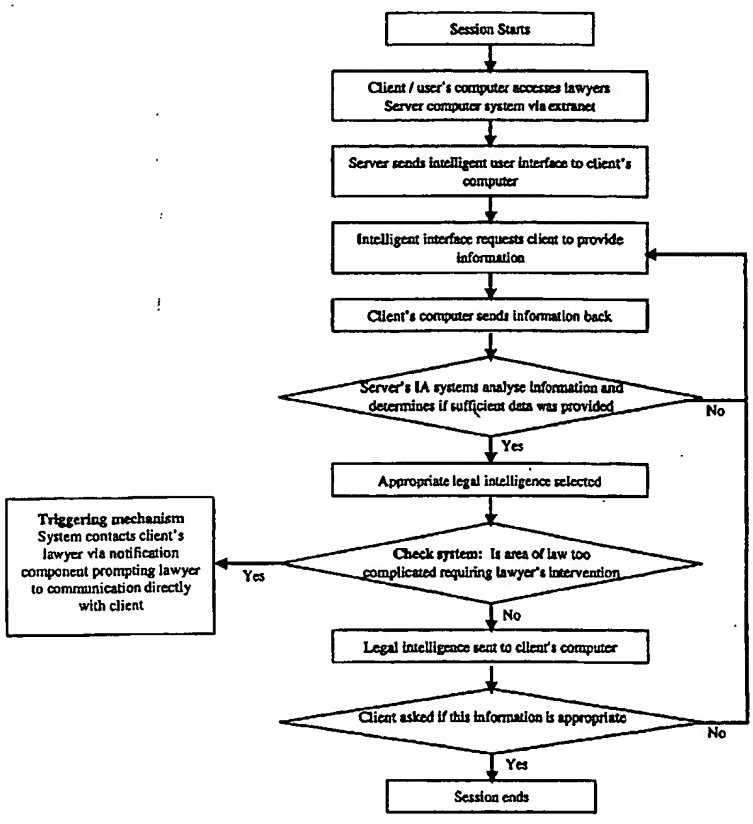
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,

[Continued on next page]

(54) Title: QUERY RESPONSE SYSTEM



(57) Abstract: The present invention relates to the provision of query response software which is adapted to initially receive query information and identity information for a user. The software employed can then search for information identified by the query information and retrieve this information, and then subsequently deliver the retrieved information of a user. This query response software can also determine whether the delivered information can successfully be employed by the user involved to answer the query, and if the user is unlikely to succeed, the software can contact a specialist advisor. Methods of providing a response to a query and a method of retrieving information are also within the scope of the invention disclosed.

WO 2004/049210 A1

SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

4/PRTS

10/536951
JC06 Rec'd PCT/PTO 31 MAY 2005
PCT/NZ2003/000262

QUERY RESPONSE SYSTEM

TECHNICAL FIELD

This invention relates to systems used to retrieve information or data to answer a query or question of a user. Preferably, the present invention may be implemented through software adapted to search for information relating to a query posed by a user, and may also preferably be adapted to enlist the assistance of a specialist service provider if the information retrieved is unlikely to be employed successfully by the user. However, those skilled in the art should appreciate that other applications are also envisioned for the present invention, and reference to the above only throughout this specification should in no way be seen as limiting.

BACKGROUND ART

A large variety and range of sources of information are available to the general public. If a person has a query, question or problem, a search can be performed for information which can assist them in answering directly the query or question involved. Reference books, magazines, newspapers, and internet web page publications may all be accessed by the general public to address any number of different queries or problems over a wide range of fields of interest. However, due to the scope of the information available to most users, there is the potential for a person to retrieve (and will need to consider) a large volume of highly specialised information when searching for an answer to their query. For example, completing a basic internet search using keywords can produce hundreds of pages of results which an unqualified member of the public may need to review to answer their current query.

By completing such searching, the general member of the public may not necessarily find all the information relevant to their query nor have the patience to

consider all the information found. Furthermore, in highly specialised or technical fields, it is possible for the average person to misinterpret information they have at hand to come at the wrong answer for the current query. In addition, such specialised and potentially detailed information may also be difficult for the average user to follow and also understand.

Specialist service providers can advise members of the general public with respect to the more detailed or complicated queries a person may have. However, these advisors normally charge a fee for their assistance or advice, and as such some people prefer to attempt to address any simple or uncomplicated queries themselves first through basic research. However, due to a lack of specific background in the area of research, it can be difficult for members of the general public to identify exactly how complex or involved their current query is and also whether they are likely to successfully resolve their query without the assistance of a specialist service provider.

It would be of an advantage to have an improved system, method or apparatus available which could address any or all of the above problems. Specifically, it would be an advantage to have a system, method or apparatus which could indicate the likelihood of a query being successfully resolved by a person searching for information to either (or both) the person searching and a specialised service provider working in the field of interest.

All references, including any patents or patent applications cited in this specification are hereby incorporated by reference. No admission is made that any reference constitutes prior art. The discussion of the references states what their authors assert, and the applicants reserve the right to challenge the accuracy and pertinency of the cited documents. It will be clearly understood that, although a number of prior art publications are referred to herein, this reference does not

constitute an admission that any of these documents form part of the common general knowledge in the art, in New Zealand or in any other country.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will be taken to mean an inclusion of not only the listed components it directly references, but also other non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided a method of information retrieval which is adapted to execute the steps of

i) receiving requirements information and identity information from a user, and

ii) searching for information identified by said requirements information and retrieving said information, and

iii) delivering the retrieved information to the user identified by the received identity information, and

iv) determining whether the delivered information will meet the requirements set out in the requirements information, and

v) contacting a specialist advisor if the information delivered is unlikely to meet the user's requirements.

According to a further aspect of the present invention there is provided a method of information retrieval substantially as described above wherein the specialist advisor is supplied with the user's identity information and requirements information.

According to a further aspect of the present invention there is provided a method of providing a response to a query which is adapted to execute the steps of

i) receiving query information and identity information from a user, and

ii) searching for information identified by said query information and retrieving said information, and

iii) delivering the retrieved information to said user, and

iv) determining whether the delivered information can be successfully employed by the user to answer their query, and

v) contacting a specialist advisor if the user is unlikely to successfully employ the information delivered to answer their query.

According to yet another aspect of the present invention there is provided a method of providing a response to a query substantially as described above wherein the specialist advisor is supplied with the user's identity information and query information.

According to a further aspect of the present invention there is provided query response software which is adapted to execute the steps of

i) receiving query information and identity information from a user, and

ii) searching for information identified by said query information and retrieving said information, and

iii) delivering the retrieved information to said user, and

iv) determining whether the delivered information can be successfully employed by the user to answer their query, and

v) contacting a specialist advisor if the user is unlikely to successfully employ the information delivered to answer their query.

According to a further aspect of the present invention there is provided query response software which is adapted to execute the steps of

(i) receiving query information and identity information from a user, and

(ii) searching for information identified by said query information and retrieving said information, and

(iii) delivering the retrieved information to said user, and

(iv) determining a query complexity threshold for the query information received and

(v) determining a user complexity threshold for the identity information received, and

(vi) determining whether the query complexity threshold exceeds the user complexity threshold, and

(vii) contacting a specialist advisor if the query complexity threshold exceeds the user complexity threshold.

According to yet another aspect of the present invention there is provided query

response software substantially as described above wherein the specialist advisor contacted is supplied with the user's identity information and query information.

According to yet another aspect of the present invention there is provided a query response system which includes at least one computer system programmed with computer software adapted to execute a method of responding to a query substantially as described above.

The present invention may be adapted to provide an information retrieval facility, service or system, and in preferred embodiments may provide a query response service or system. In its most basic forms the present invention may assist in the retrieval of information and in preferred embodiments may be employed to actively assess a particular query, question or problem of a user and assist in the retrieval of information to answer said query.

The present invention also encompasses a method of retrieving information and responding to queries in addition to a system or apparatus adapted to execute such a method. Preferably the system or apparatus employed may use computer software programmed into a computer system which is adapted to execute the steps required to implement the present invention.

Preferably a computer system as used in conjunction with the present invention may be formed from any type of programmable logic device and can also encompass networks of such devices if required. Furthermore, the computer system used can employ a client / server architecture to provide multi-user access to the distributed facilities or functions provided.

Reference throughout this specification will also be made to the present invention being implemented through software loaded into a computer system. However, those skilled in the art should appreciate that other types of technology may also

be employed to implement the present invention and reference to the above only throughout the specification should in no way be seen as limiting.

In a preferred embodiment the present invention may be implemented through or use an internet or web based interface. In such instances, internet based transmission protocols can be employed to allow the software provided to communicate with a user. The software employed may run on a central host server and be accessed through client applications run by users. Furthermore, in preferred embodiments, client applications may be provided through standard internet or web page browsers, thereby eliminating need for a user to install customised or new software to employ the present invention. The use of current internet technology also allows existing telecommunications and information technology infrastructure to be employed to implement the present invention. Existing web server technology may also be used to run a central server or host computer which can interact with commands, requests or information sent by users.

In a preferred embodiment, the software employed and the facilities it provides may only be accessible to registered users or subscribers. Registered users can provide specific information to the administrator or operator of the present invention regarding their interests, requirements, qualifications or experience where this information can in turn be employed in the execution of the method or methods of the present invention. Furthermore, by restricting access to the present invention, the operator of same may ensure that they can correctly identify which persons or organisations are using the facilities provided, and can employ this information to track the activities and interests of the users involved. The tracking of activities can be used to improve the accuracy and responses of the facility provided by for example, caching information retrieved for common queries locally on the computer system contacted by users. Furthermore, if a particular area of subject

matter is popular with a group of users the operator or administrator of the present invention may decide to store locally greater volumes or amounts of information particular to the subject area of interest.

In a preferred embodiment, the first step executed by the method of the present invention may be the receipt of requirements information or query information from a user. If for example, the present invention is implemented as a simple information retrieval facility, requirements information received may consist of keywords, phrases or text constructions indicating the field area of interest of a user from which information is to be retrieved in relation to. However, preferably the present invention may be adapted to receive query information which details a specific question, query or problem currently facing the user involved. Such query information subsequently be employed constructively by the present invention to retrieve information which can be used to solve or answer said query.

Those skilled in the art should appreciate that the form or format of requirements information or query information to be received will vary depending on a particular application within which the present invention is to be used, in addition to the specific technical implementation employed to provide the present invention. For example, in some instance this type of information may simply consist of a series of keywords submitted by a user or alternatively, may incorporate a paragraph or phrase in natural language detailing specific concerns, queries or problems.

In a preferred embodiment, the present invention may also be adapted to receive identify information from a user in the initial stages of the method or methods executed. Such identify information may be employed to identify or specify the particular user currently employing the invention. Such identify information may consist of a user name and also preferably a password which can be employed to both authorise the user's access to the facilities provided, in addition to being used

to retrieve further, more detailed information specific to the particular user identified.

For example in one preferred embodiment the user name submitted may be used to retrieve an associated database record where the database record also includes a password field. Such a database record may be used to provide further, more detailed information regarding the particular user including their fields of expertise, experience and qualifications and/or historical information detailing the user's previous uses of the facilities provided in accordance with the present invention. A comparison between the submitted password and the stored password will then validate or refuse the user's access to facilities provided in conjunction with the present invention.

Reference throughout this specification will also be made to the present invention being used to implement a query response method through appropriate computer software and hardware. Through the reception of query information and also associated identify information, the present invention may be employed to assist a user in the resolution of a particular query or queries. However, those skilled in the art should appreciate that the present invention in its more basic forms may simply be used as an information retrieval system as discussed above and reference to the resolution of queries throughout this specification should in no way be seen as limiting.

Preferably, once the requirements or query information has been received from a user, the present invention may be employed to execute a search for information to be used to answer the user's query. Such a search may be completed in any number of ways depending on the particular implementation of the present invention employed. However, in a preferred embodiment, an internet based web search may be completed in addition to a search of locally stored electronic

resources or information held in or in association with the computer software employed to implement the present invention.

In a preferred embodiment the present invention may be employed primarily to search through electronic format information or records in the form of database records. Information in an electronic form may be easily catalogued, assessed and traversed using software. For example, in a preferred embodiment the host or provider of the present invention may make available a local cache of their own resources and documentation generated "in-house". Furthermore, existing in-house or alternatively third party local or remote databases may also be accessed in conjunction with the present invention. Such databases may provide electronic stores of information such as for example press cuttings, journal articles, bibliographic references, president legal documents, case notes, practice notes, document templates, document archives or email archives available in electronic form. Such electronic format documents or information may readily be retrieved and supplied to a user.

Those skilled in the art should appreciate that any number and range of different types of documents may be searched, traversed and retrieved in conjunction with the present invention and any number of private, third party, public or commercial electronic databases may also be employed in conjunction with the present invention.

Preferably any information retrieved in relation to a user's query information may be delivered directly back to the user once available. Preferably the present invention may not necessarily filter, adjust or modify such information in preferred embodiments. However, in alternative embodiments the present invention may also be employed to assess the relevance of any information found and subsequently filter or remove some of the information which is considered to not

directly relate or not directly relevant to the query proposed by a user. In such instances the information delivered to a user for review can be reduced to a manageable level.

In a further preferred embodiment once the information found by such a search has been retrieved, an assessment may be made with respect to whether such information likely to be successfully employed by the user involved to answer their query. Alternatively, in other embodiments where the present invention is used as information retrieval system, an investigation may be made as to whether information retrieved is likely to meet the requirements of the user, as specified by the requirements information submitted by the user. In all instances, an assessment can be made with respect to whether the quality, scope or complexity of the information retrieved or alternatively the scope, extent or complexity of the query posed by the user. This assessment can be executed to determine whether the information delivered will actually be of use to the user.

In a further preferred embodiment, such an assessment may be completed through calculating or determining a complexity threshold for a user, herein defined as a user complexity threshold. Preferably this threshold may be composed of or formed from a numeric value or other type of quantitative information which can be ranked or prioritised. The user complexity threshold calculated need not necessarily scale or relate to any real quantity but may just be used to indicate the user's threshold for successfully assessing or using the information retrieved to solve a specific query or to meet the requirements specified.

In addition, a complexity threshold for the query specified by a user may also be determined or calculated, herein defined as a query complexity threshold. The query complexity threshold can give an indication as to the degree of difficulty or complexity of the problem currently facing a user, and preferably may take the form

of a quantifiable value property (preferably a numeric reference) which can be ranked or prioritised.

In a preferred embodiment, the user complexity threshold may be compared with the query complexity threshold to determine whether a user is likely to successfully employ the information retrieved and subsequently delivered to answer a query. Furthermore, in other alternative embodiments, a user complexity threshold may be compared with a requirements complexity threshold when the present invention is employed simply to retrieve the information meeting the user's requirements. These two threshold values may then be compared with respect to one another to determine the user's likelihood of success employing in the information delivered.

The complexity thresholds discussed above may be calculated or determined using any number of different types of mechanisms, procedures or algorithms.

For example, in a preferred embodiment a user complexity threshold may be calculated employing a user modelling agent.

User modelling can be undertaken by applying one or more heuristics interpreted against a rule base. Relevant heuristics could be:

- Causality – why a user performs actions. The user intent ascription states that a user performs actions in response to environmental stimuli and to achieve some goal.
- Context – what is the current context. For certain types of interface agents – e.g. agents for information filtering and/or data mining – the current context is important. For example, if a user is referring to a bank, it is useful to know whether he/she are referring to a financial institution or a river bank. The context of previous interactions may help disambiguate the current use of a word.

- Frequency – how often a user performs an action. Some interface agents use a facing function so actions become less relevant as time progresses.

- Human-factors – who is the user. Knowing user information a priori can be useful for adapting the interface to the user's needs. Human-factors such as psychological factors (e.g. spatial ability, cognitive ability, temporal ability), as well as psychological factors (e.g. skill level, age) may be directly applicable to the user's needs.

- Modality – what modes a user prefers, or uses explicitly or implicitly. This heuristic captures a large portion of the meaningful characteristics in direct manipulation interfaces. For example, what skill level (expert, intermediate, novice) does the user prefer? What type of ways do they like to view their information (e.g. full page, page layout, outline)? What presentation methods such as textual, graphical, audible or natural language they prefer or not?

- Resource usage – what resources a user needs.

However, in an alternative embodiment different mechanisms may also be implied. For example, anyone of the following mechanisms may also be used if required.

Appropriateness Criteria Modelling Agent – cognitive agent architecture based on a series of user metrics including goals and beliefs, cognitive and spatial skills and preferences ranking which are assumed forming the basis of a model to which the user is compared via a series of questionnaires. With the help of a rule base each agent is capable of combining threshold values with preferences information received from the user. The further series of interview with quantify goals and validate the appropriateness of the model.

Procedural Reasoning Systems Agent – PRS architecture consist of (1) a database

containing current facts and beliefs, (2) a set of goals to be achieved, (3) a set of plans or procedures describing how certain sequences of conditional tests and actions may be performed to achieve certain goals or to react to certain situations, and (4) an interpreter that manipulates these components to select and execute appropriate plans for achieving the system's goals. PRS agents provide a generic architecture for reasoning systems. They employ three main elements, being a database of current system beliefs, a library of plans, an intention graph consisting of the ordered set of plans. These components are manipulated by an interface routine which executes one step in the selected intention.

Domain-specific Syntactic and Semantic Content Consideration Agent – how a user with content or structure of documents determines cognitive ranking. Agent performs evaluative routine against assumed norms.

Wizard of Oz Agent – the user interacts with application while a human expert provides application assistance. The user is unaware the assistance is being provided by human expert. The effect is a person "behind the curtain" able to rank the user's complexity threshold.

Those skilled in the art should also appreciate that similar mechanisms or systems may also be employed to calculate both user and query threshold in conjunction with the present invention.

In a preferred embodiment, if the comparison of complexity thresholds indicates the user is unlikely to succeed, a specialist advisor may be contacted, with the specific user information and query information supplied in turn being delivered to such a specialist advisor. This feature of the present invention may automatically alert the specialist advisor involved that the user employing the present invention has a query that they may not necessarily be able to successfully resolve without help. Such a specialist advisor may employ the identity information delivered to in

turn contact the user directly to discuss their query or requirements.

In a further preferred embodiment, the user in question may also be alerted to the fact that the present invention has determined they are unlikely to successfully employ the information delivered to resolve their query or to successfully meet the requirements they have specified. In such instances the user may be advised that a specialist advisor has been contacted to assist them in correctly addressing their query or current requirements.

In a further preferred embodiment, the specialist advisor to be contacted may be directly involved with the administration, running or provision of the facilities provided in accordance with the present invention. This allows a specialist advisor in any number of different types of fields or areas of expertise to employ the present invention to answer the more basic or simple queries posed by clients or customers, using automated software, functions or facilities. The present invention may also provide a catch-all safety net facility which will bring a particular customer or client to the attention of the specialist advisor if they are identified as unlikely to be able to successfully use the information they are delivered.

The present invention may provide many potential advantages over existing systems for retrieving information or responding to queries.

A user may interact with the system provided to retrieve information pertaining to a particular query or to specify an area of interest with requirements information. Related information can then be delivered back to such a user without necessarily having to involve a specialised advisor to the information involved. Such a specialist advisor may also be contacted if it appears that the user is unlikely to successfully use any or all of the information delivered.

The present invention may assist in the answering of user queries while

safeguarding users from incorrectly assessing or analysing the information delivered to them. The present invention may test or assess the user's ability to employ such information and provide a warning or access to specialist advice if required.

BRIEF DESCRIPTION OF DRAWINGS

Further aspects of the present invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

Figure 1 shows a flowchart of steps taken and tests made by software employed to implement the present invention in a preferred embodiment, and

Figure 2 illustrates the operation and interrelationship of specific software modules constructed to implement the software discussed with respect to figure 1, and

Table 1 provides further information regarding the modules or agents discussed with respect to figure 2.

Figure 3 shows a flowchart of steps taken and processes executed by software employed by the present invention in an alternative embodiment.

BEST MODES FOR CARRYING OUT THE INVENTION

Figure 1 shows a flowchart of steps taken and tests made by software employed to implement the present invention in a preferred embodiment. In the situation shown, the present invention is implemented through software which is provided or administered by a lawyer or a lawyer's office. Such software is used to assist the

lawyer's clients in researching and assessment relatively simple queries and also to alert the lawyer or lawyers involved when a client has a query which they are unlikely to be able to successfully resolve without assistance.

In the implementation discussed, a lawyer's client initially starts up their own remote computer system and uses an internet web browser to access the lawyer's server and computer system. Through xml/html page rendering, the lawyer's web server sends a series of web pages and some web based forms to be filled in by the client using their own web browser client and computer system. Once completed, these forms are then sent back to the lawyer's web server for subsequent analysis and assessment by processing components of the software employed to implement the present invention.

At this stage, the web server's interface agent (IA) systems determines whether the forms rendered for the client were successfully filled out and all of the information required by the software involved has been provided by the client. If any of the fields in the forms presented are missing, the client is required to resubmit these forms to provide all the information required.

As part of the information requested and transmitted through web page forms, a client submits identify information and query information. Identify information consists of the user name and password which allows the system employed to both positively identify the user and also validate their access rights to the facilities provided. The query information submitted by a user identifies in plain language a particular problem faced by the user or alternatively, in some instances, consists of requirements information which simply set out keywords relating to a field or area of interest to the client.

Once both the identity information and query information has been received by the software employed, a search is completed to retrieve any or all information

resources to be used in answering the client's query.

When information found by this search has been retrieved, the software employed calculates both a user complexity threshold and a query complexity threshold. These threshold parameters or values indicate a user's ability to assess information retrieved in addition to the complexity of the information retrieved. Once these two thresholds have been calculated or determined, the software provided then tests whether the client has the ability to successfully assess the information retrieved.

If the client is unlikely to succeed, a system notification component generates an email or phone message or application alert message or all of the fore-mentioned notifications, that is then employed to contact the lawyers involved and prompt them to contact the client and render assistance in relation to the client's query.

If the software provided indicates that the client is likely to successfully employ the information retrieved, this information is sent directly to the client with a prompt for the client to confirm that the information delivered is appropriate. If the client is not satisfied with the quantity or quality of the information delivered, the above steps may be repeated to trigger the searching and retrieval of further information in relation to the client's query. If the client is satisfied, they may then be disconnected from the web server and software provided.

Figure 2 illustrates the operation and interrelationship of specific software modules constructed to implement the software discussed with respect to figure 1.

Table 1 provides further information regarding the modules or agents discussed with respect to figure 2.

The software employed in conjunction with the present invention uses a series of modules or specific agents to provide the functions or facilities required by the

present invention.

User interface agents are written to handle the interaction with the clients' web browser including the requests for and receipt of user identity information and query information from the lawyers' client.

The analysis agent is employed to assess the complexity of a user's query and also the complexity of information retrieved to be used to answer a user's query. Furthermore, the analysis agent calculates both a user complexity threshold, and a query complexity threshold in turn uses these complexity thresholds to determine whether the user is likely to successfully answer their own query with the information retrieved and delivered.

Information searching agents also make up another separate module or agent employed with the software provided. These agents are written for specific information domains or areas of legal expertise, and are given the appropriate instructions or input parameters from the analysis agent to search for and subsequently retrieve electronic information resources.

A management computer agent or module is employed to handle the execution and operation of each of the modules or agents discussed above. Such a management application interfaces with the operating system, virtual machine or execution environment employed on the computer system running such software to control the execution of each module depending on the flow of control processes to be completed, as discussed with respect to figure 1.

Figure 3 shows a flowchart of steps taken and processes executed by software employed by the present invention in an alternative embodiment.

In the embodiment shown and illustrated with respect to figure 3, a similar mechanism or procedures are employed with respect to that discussed in relation

to figure 1. Figure 3 illustrates a more explicit alternative application of the present invention where a user is requesting financial based information in relation to structures to be employed in conjunction with the business. The software provided through the agents discussed process the user's queries and retrieve relevant information and/or contact a specialist professional advisor for the user depending on the outcomes of the assessments made.

It should be noted that documents need not be contained to one specific knowledge domain, as all documents are subjected to preclassification algorithms (including metadata extraction, automatic keyphrase extraction, domain relevancy, domain complexity, word frequency analysis, corpus complexity) prior to indexing and storage. These algorithms may classify a document as relevant to multiple domains including differing levels of complexity for each domain.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof as defined in the appended claims.

WHAT WE CLAIM IS:

1. Query response software which is adapted to execute the steps of:

   (i) receiving query information and identity information from the user, and

   (ii) searching for information identified by said query information and retrieving said information, and

   (iii) delivering the retrieved information to said user, and

   (iv) determining whether the delivered information can successfully be employed by the user to answer their query, and

   (v) contacting a specialist advisor if the user is unlikely to successfully employ the information delivered to answer their query.

2. Query response software which is adapted to execute the steps of:

   (i) receiving query information and identity information from a user, and

   (ii) searching for information identified by said query information and retrieving said information, and

   (iii) delivering the retrieved information to said user, and

   (iv) determining a query complexity threshold for the query information received and

   (v) determining a user complexity threshold for the identity information received, and

   (vi) determining whether the query complexity threshold exceeds the user complexity threshold, and

(vii) contacting a specialist advisor if the query complexity threshold exceeds the user complexity threshold.

3. Query response software as claimed in any previous claim wherein the specialist advisor contacted is supplied with the user's identity information and query information.

4. Query response software as claimed in any previous claim wherein the user is alerted to the specialist advisor being contacted.

5. Query response software as claimed in any previous claim which uses an internet based user interface and internet based transmission protocols to communicate with a user.

6. Query response software as claimed in any previous claim wherein registered users only can access the query response software.

7. Query response software as claimed in any previous claim wherein identity information includes a user name and a password.

8. Query response software as claimed in any previous claim wherein query information details a specific question or problem.

9. Query response software as claimed in claim 8, wherein query information is used to retrieve information which can be used to solve a user's query.

10. Query response software as claimed in any previous claim wherein electronic format information is retrieved.

11. Query response software as claimed in claim 10, wherein electronic format information is retrieved from at least one remote electronic database.

12. Query response software as claimed in claim 10, wherein electronic format information is retrieved from a local cache.

13. Query response software as claimed in any previous claim wherein the information retrieved is filtered prior to being delivered to the user.

14. Query response software as claimed in any one of claims 2 to 13, wherein a complexity threshold is formed by information which can be ranked.

15. Query response software as claimed in claim 14, wherein a complexity threshold is formed by a numerical value.

16. Query response software as claimed in claim 14, wherein a query complexity threshold indicates the degree of complexity of a user's query.

17. Query response software as claimed in claim 14, wherein a user complexity threshold indicates the user's ability to successfully use retrieved information.

18. Query response software as claimed in any one of claims 2 to 17, wherein user modelling is employed to determine a user complexity threshold.

19. A method of providing a response to a query which includes the steps of:

(i) receiving query information and identity information from the user, and

(ii) searching for information identified by said query information and retrieving said information, and

(iii) delivering the retrieved information to said user, and

(iv) determining whether the delivered information can successfully be employed by the user to answer their query, and

(v) contacting a specialist advisor if the user is unlikely to successfully employ the information delivered to answer their query.

20. A method of providing a response to a query as claimed in claim 19, wherein the specialist advisor is supplied with the user's identity information and query information.

21. A method of information retrieved adapted to execute the steps of:

(i) receiving requirements information and identity information from a user, and

(ii) searching for information identified by said requirements information and retrieving said information, and

(iii) delivering the retrieved information to the user identified by the received identity information, and

(iv) determining whether the delivered information will meet the requirements set out in the requirements information, and

(v) contacting a specialist advisor if the information delivered is unlikely to meet the user's requirements.

22. A method of information retrieval as claimed in claim 21 wherein the specialist advisor is supplied with the user's identity information and requirements information.

23. A method of information retrieval as claimed in any one of claims 21 or 22 wherein the requirements information received consists of key words and/or phrases.

24. Query response software substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.

25. A method of providing a response to a query substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.

26. A method of information retrieval substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.

FIGURE 1

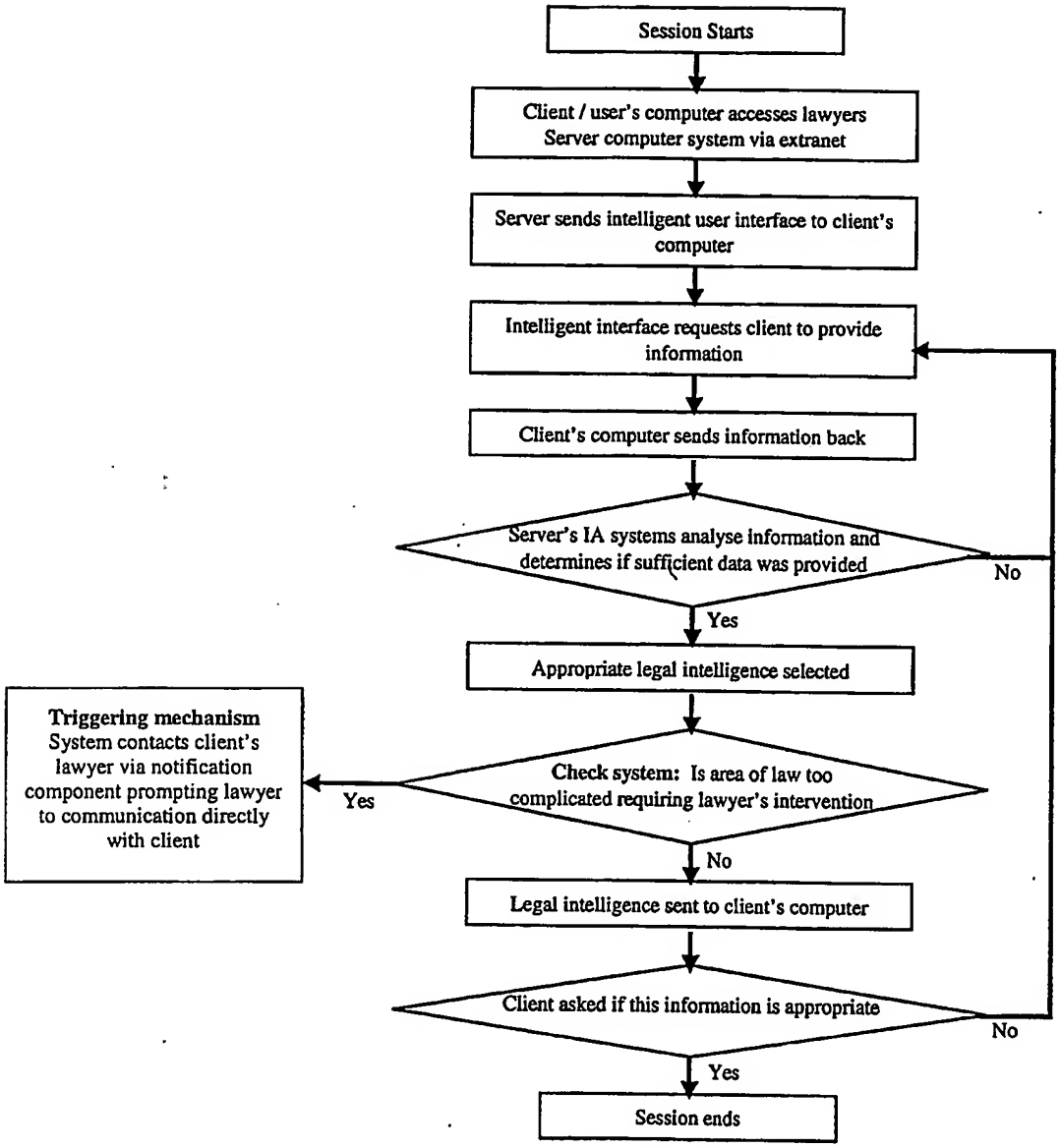

Session Starts
Client / user's computer accesses lawyers Server computer system via extranet
Server sends intelligent user interface to client's computer
Intelligent interface requests client to provide information
Client's computer sends information back
Server's IA systems analyse information and determines if sufficient data was provided
No
Yes
Appropriate legal intelligence selected
Triggering mechanism System contacts client's lawyer via notification component prompting lawyer to communication directly with client
Yes
Check system: Is area of law too complicated requiring lawyer's intervention
No
Legal intelligence sent to client's computer
Client asked if this information is appropriate
No
Yes
Session ends

FIGURE 2

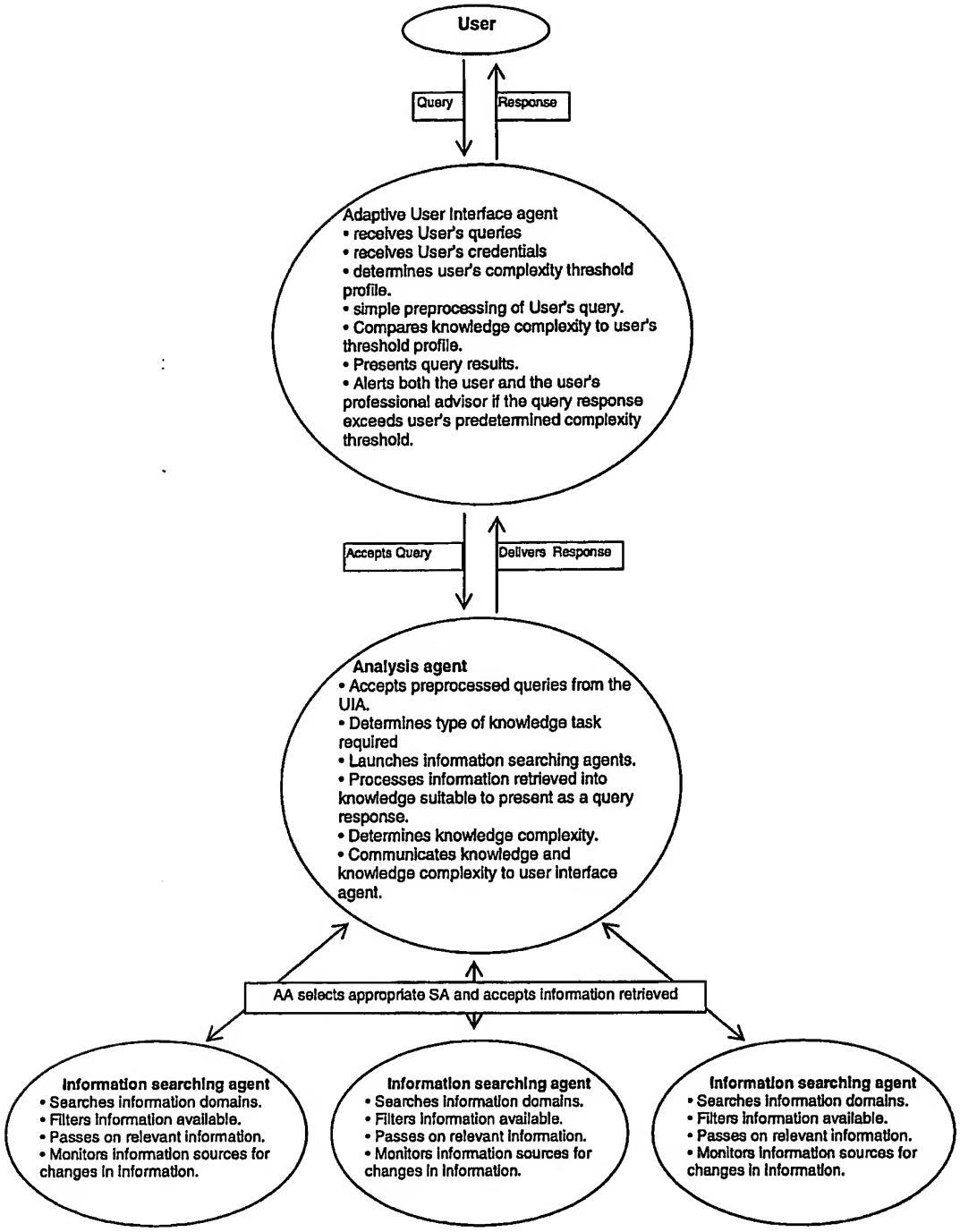
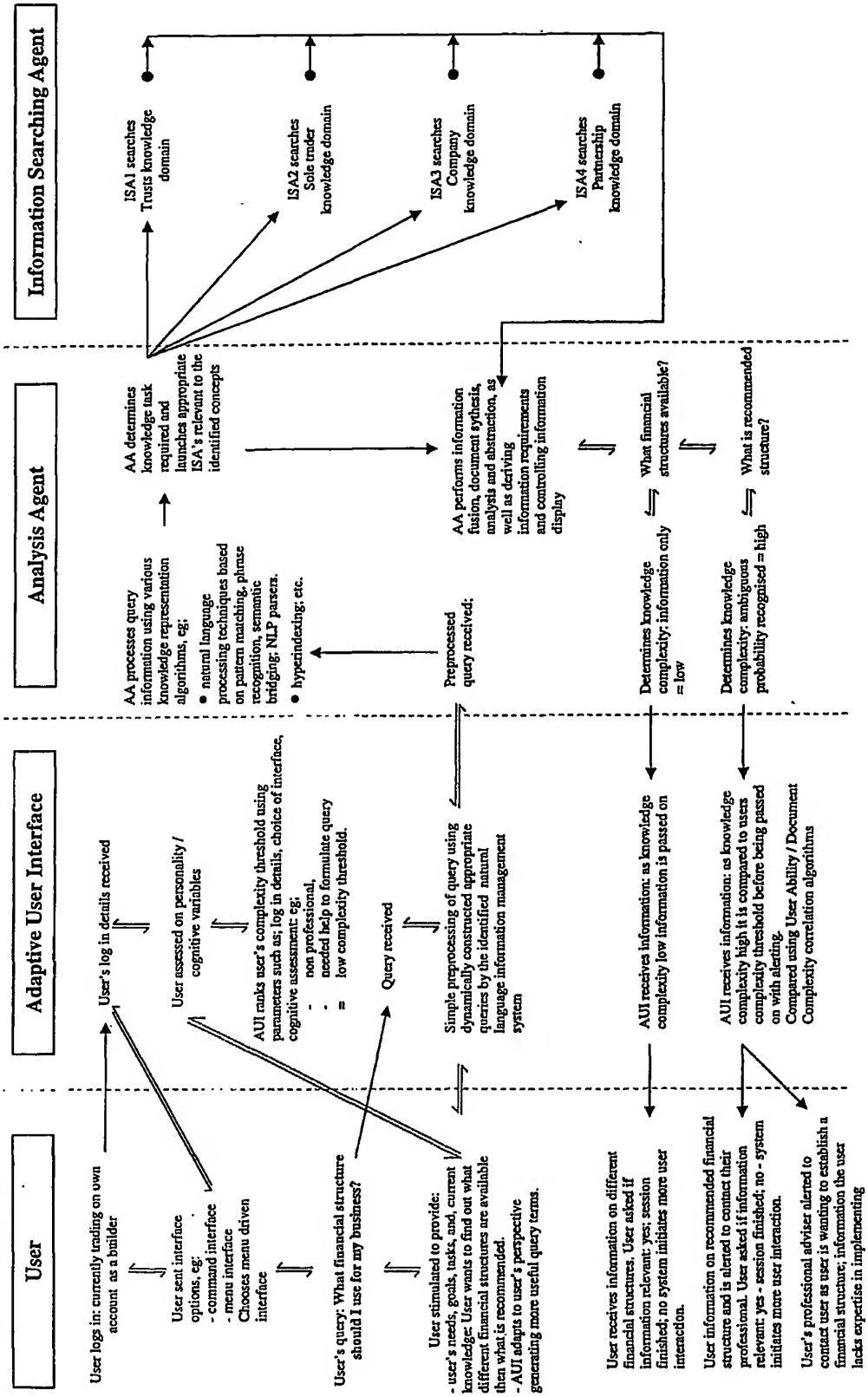

User
Query
Response
Adaptive User Interface agent
• receives User's queries
• receives User's credentials
• determines user's complexity threshold profile.
• simple preprocessing of User's query.
• Compares knowledge complexity to user's threshold profile.
• Presents query results.
• Alerts both the user and the user's professional advisor if the query response exceeds user's predetermined complexity threshold.
Accepts Query
Delivers Response
Analysis agent
• Accepts preprocessed queries from the UIA.
• Determines type of knowledge task required
• Launches information searching agents.
• Processes information retrieved into knowledge suitable to present as a query response.
• Determines knowledge complexity.
• Communicates knowledge and knowledge complexity to user interface agent.
AA selects appropriate SA and accepts information retrieved
Information searching agent
• Searches information domains.
• Filters information available.
• Passes on relevant information.
• Monitors information sources for changes in information.
Information searching agent
• Searches information domains.
• Filters information available.
• Passes on relevant information.
• Monitors information sources for changes in information.
Information searching agent
• Searches information domains.
• Filters information available.
• Passes on relevant information.
• Monitors information sources for changes in information.

TABLE 1

Agent Computer program	Function Designed to perform a task of varying complexity.	Characteristics • Autonomous; operates as a stand alone process without user intervention. • Communicative: communicates with the user and other agents. • Perceptive: able to perceive and respond to changes in its environment.
User interface agent	Interacts with the user by: • receiving User's queries • receiving User's credentials • simple preprocessing of User's query. • Presenting query results	Adaptive user interface • Observes and learns user's preference and habits. • Based on user's level of expertise
		Agent is proactive in undertaking an information filtering role and communicating with analysis and information searching agents.
		Agent presents an easy to understand and use anthropocentric interface.
Analysis agent	Accepts preprocessed queries from the UIA and: • Launches information searching agents. • Processes information retrieved. • Communicate problem-solving strategies to user interface agent. • Provides useful tips and directions. • Alerts both the user and the user's professional advisor if the recommended strategy exceeds a predetermined complexity threshold	Strategised to query and exchange information with the interface agent
		Programmed to select appropriate information search agents
		Able to fuse information retrieved by the information searching agents
		Formulated to recognise problem -solving requirements.
		Can compare complexity of problem solving solution to predetermined thresholds of rule complexity.
Information searching agent	Search particular heterogenous information sources and: • Filters information available. • Passes on only information user is interested in. • Monitors information sources for changes in information.	Specialised agent strategised to select particular information sources
		Incorporate models of conflict resolution
		Incorporate models of information fusion
		Communicates with other agents

FIGURE 3


User
Adaptive User Interface
Analysis Agent
Information Searching Agent
User logs in: currently trading on own account as a builder
User's log in details received
User sent interface options, eg:
- command interface
- menu interface
Chooses menu driven interface
User assessed on personality / cognitive variables
AUI ranks user's complexity threshold using parameters such as; log in details, choice of interface, cognitive assessment: eg;
- non professional,
- needed help to formulate query
= low complexity threshold.
User's query: What financial structure should I use for my business?
Query received
User stimulated to provide:
- user's needs, goals, tasks, and, current knowledge: User wants to find out what different financial structures are available then what is recommended.
- AUI adapts to user's perspective generating more useful query terms.
Simple preprocessing of query using dynamically constructed appropriate queries by the identified natural language information management system
AA processes query information using various knowledge representation algorithms, eg;
• natural language processing techniques based on pattern matching, phrase recognition, semantic bridging; NLP parsers.
• hyperindexing; etc.
Preprocessed query received;
AA determines knowledge task required and launches appropriate ISA's relevant to the identified concepts
ISA1 searches Trusts knowledge domain
ISA2 searches Sole trader knowledge domain
ISA3 searches Company knowledge domain
ISA4 searches Partnership knowledge domain
AA performs information fusion, document sythesis, analysis and abstraction, as well as deriving information requirements and controlling information display
Determines knowledge complexity: information only = low
What financial structures available?
Determines knowledge complexity: ambiguous probability recognised = high
What is recommended structure?
AUI receives information: as knowledge complexity low information is passed on
AUI receives information: as knowledge complexity high it is compared to users complexity threshold before being passed on with alerting.
Compared using User Ability / Document Complexity correlation algorithms
User receives information on different financial structures. User asked if information relevant: yes; session finished; no system initiates more user interaction.
User information on recommended financial structure and is alerted to contact their professional. User asked if information relevant: yes - session finished; no - system initiates more user interaction.
User's professional adviser alerted to contact user as user is wanting to establish a financial structure; information the user lacks expertise in implementing

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ03/000262

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: G06F 17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DWPI G06F 17/30 and keywords such as Search engine+, search+, user identity, complexity and similar words

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0078034 A1 (CHO et al) 20 June 2002 See entire document and particularly Page 2 Paragraphs (0020 - 0023)	1-26
A,P	GB 2388450 A (HEWLETT PACKARD) 12 November 2003 See entire document and particularly pages 5,6	1-26
A	WO 01/27816 A1 (BEA SYSTEMS) 19 April 2001 See entire document and particularly pages 7-9	1-26

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" Document defining the general state of the art which is not considered to be of particular relevance

"E" Earlier application or patent but published on or after the international filing date

"L" Document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" Document referring to an oral disclosure, use, exhibition or other means

"P" Document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 March 2004	10 MAR 2004
Name and mailing address of the ISA/AU	Authorized officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	C. BERKO Telephone No : (02) 6283 2619

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ03/000262

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 00/08568 A1 (DRYKEN TECHNOLOGIES) 17 February 2000 See entire document and particularly pages 3,4	1-26

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/NZ03/000262

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	0008568	AU	40320/00	AU	52547/99	EP	1082698
		US	6266668	US	6269351	US	2002049704
		WO	0058908				
GB	2388450	US	2003212663				
WO	0127816	AU	10919/01	AU	23185/02	US	2002108099
		US	2002147763	WO	0231651	WO	02086704
US	2002078034						

END OF ANNEX